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EXAMINER	
PATEL, GAUTAM	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/634,781	Applicant(s) YUKAWA, HIROAKI	
	Examiner Gautam R. Patel	Art Unit 2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6-10 and 14-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-10 and 14-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/801,343.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1. Claims 6-10, 14-26 are pending are for the examination after restriction. Claims 1-5 & 11-13 are cancelled without prejudice and new claims 17-26 are added by the Applicants.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. § 119(a)-(d), in previous parent application.

Election/Restriction

3. Claims 1-5 and 1-13 are cancelled without prejudice by the Applicant. Election was made without traverse in paper dated 9-30-04.

Claim Rejections - 35 U.S.C. § 103

4. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 6-10 and 14-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Uchizaki et al., US. patent 6,646,975 (hereafter Uchizaki) in view of Ohuchida et al., US. patent 4,935,911 (hereafter Ohuchida).

As to claim 6, Uchizaki discloses the invention as claimed [see Figs. 1-8 especially 1, 4B, 5, & 7A] including a first light source, a second light source, an objective lens, a photodetector, and a diffraction element comprising:

a first light source [fig. 5, unit 31A] for emitting a first light beam having a first wavelength [650 nm] [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

a second light source [fig. 5, unit 31B] for emitting a second light beam having a second wavelength [780 nm] different from the first wavelength [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

an objective lens [fig. 1-2, unit 17] for focusing said first light beam or said second light beam to the signal recording surface of an optical recording medium [fig. 1, units 18 and 19] of a first type matching to the first wavelength or that of an optical recording medium of a second type matching to the second wavelength, whichever appropriate [col. 8, lines 38-47];

a photodetector [fig. 3B, unit 35] for detecting the light beam focused on the signal recording surface of the optical recording medium of the first type or that of the optical recording medium of the second type, whichever appropriate, by the objective lens and reflected by the signal recording surface [col. 8, lines 56-63]; and

a diffraction element [fig. 3B, unit 33] arranged in the light path from the light sources to the photodetector by way of one of the first or second type of optical recording medium, the diffraction element having a first diffraction angle [angle determined by equation (1), first wavelength lambda determines the first angle [col. 9, line 51] and a second diffraction angle [second wavelength lambda determines the second angle [col. 9, line 51], wherein a difference between the first diffraction angle and the second diffraction angle is predetermined to offset a distance separating the first light source and the second light source [position relation] [col. 9, line 35 to col. 10, line 22]; and

at least either of the first light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the first type and reflected by the signal recording surface of the optical recording medium of the first type or the second light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the second type and reflected by the signal recording surface of the optical recording medium of the second type and being diffracted by the diffraction element, wherein the first reflected light beam and the second reflected light beam being focused to a same spot [same

position] on the light receiving surface of the photodetector [col. 1, lines 17-30 and col. 12, line 56 to col. 13, line 4];

Uchizaki discloses all of the above elements, including diffraction grating element [fig. 3A, unit 33]. Uchizaki does not specifically discloses type of grating design being used in his system i.e. if his diffraction grating consist of a pair of plates or it can be of blazed type to the extent claimed.

However, pair of plates being used as blazed type diffraction gratings have been well known in the art for a very long time for improving the diffraction efficiency. Also Ohuchida clearly discloses:

A pair of plates [units 230 and 233] of a medium as a diffraction element [fig. 16-17] [col. 7, lines 45-58].

Both Uchizaki and Ohuchida are interested in improving the diffraction grating pattern in an optical disk device for recording and reading information. Both are disclosing diffraction gratings that are suitable for multiple wavelength.

One of ordinary skill in the art at the time of invention would have realized that reduction in the cost of the system is desired attribute to have in a system design, and this cab be achieved by reduction of the components. Also detection of polarization with high sensitivity is a desired feature to have.

Therefore, it would have been obvious to have used a pair of plates of blazed grating design in the system of Uchizaki as taught by Ohuchida because one would be motivated to reduce the part count in the system design [such as halfwave plate and Wollaston prism and thus save cost of the over all system and also more importantly detect the polarization with high sensitivity without using parts such as halfwave plates [col. 7, lines 5-11 and lines 25-30; Ohuchida].

6. The aforementioned claim 7, recites the following elements, inter alia, disclosed in Uchizaki:

a first light source [fig. 5, unit 31A] for emitting a first light beam having a first wavelength [650 nm] [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

a second light source [fig. 5, unit 31B] for emitting a second light beam having a second wavelength [780 nm] different from the first wavelength [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

an objective lens [fig. 1-2, unit 17] for focusing said first light beam or said second light beam to the signal recording surface of an optical recording medium [fig. 1, units 18 and 19] of a first type matching to the first wavelength or that of an optical recording medium of a second type matching to the second wavelength, whichever appropriate [col. 8, lines 38-47];

a photodetector [fig. 3B, unit 35] for detecting the light beam focused on the signal recording surface of the optical recording medium of the first type or that of the optical recording medium of the second type, whichever appropriate, by the objective lens and reflected by the signal recording surface [col. 8, lines 56-63]; and

a diffraction element [fig. 3B, unit 33] arranged in the light path from the light sources to the photodetector by way of one of the first or second type of optical recording medium, the diffraction element having a first diffraction angle [angle determined by equation (1), first wavelength lambda determines the first angle [col. 9, line 51] and a second diffraction angle [second wavelength lambda determines the second angle [col. 9, line 51], wherein a difference between the first diffraction angle and the second diffraction angle is predetermined to offset a distance separating the first light source and the second light source [position relation] [col. 9, line 35 to col. 10, line 22]; and

each of the first light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the first type and reflected by the signal recording surface of the optical recording medium of the first type or the second light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the second type and reflected by the signal recording surface of the optical recording medium of the second type and being diffracted by the diffraction element, wherein the first reflected light beam and the second reflected light beam being focused to a same spot [same position]

on the light receiving surface of the photodetector [col. 1, lines 17-30 and col. 12, line 56 to col. 13, line 4];

Uchizaki discloses all of the above elements, including diffraction grating element [fig. 3A, unit 33]. Uchizaki does not specifically discloses type of grating design being used in his system i.e. if his diffraction grating consist of a pair of plates or it can be of blazed type to the extent claimed.

However, pair of plates being used as blazed type diffraction gratings have been well known in the art for a very long time for improving the diffraction efficiency. Also Ohuchida clearly discloses:

A pair of plates [units 230 and 233] of a medium as a diffraction element [fig. 16-17] [col. 7, lines 45-58].

Both Uchizaki and Ohuchida are interested in improving the diffraction grating pattern in an optical disk device for recording and reading information. Both are disclosing diffraction gratings that are suitable for multiple wavelength.

One of ordinary skill in the art at the time of invention would have realized that reduction in the cost of the system is desired attribute to have in a system design, and this cab be achieved by reduction of the components. Also detection of polarization with high sensitivity is a desired feature to have.

Therefore, it would have been obvious to have used a pair of plates of blazed grating design in the system of Uchizaki as taught by Ohuchida because one would be motivated to reduce the part count in the system design [such as halfwave plate and Wollaston prism and thus save cost of the over all system and also more importantly detect the polarization with high sensitivity without using parts such as halfwave plates [col. 7, lines 5-11 and lines 25-30; Ohuchida].

7. The aforementioned claim 8, recites the following elements, inter alia, disclosed in Uchizaki:

a first light source [fig. 5, unit 31A] for emitting a first light beam having a first wavelength [650 nm] [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

a second light source [fig. 5, unit 31B] for emitting a second light beam having a second wavelength [780 nm] different from the first wavelength [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

an objective lens [fig. 1-2, unit 17] for focusing said first light beam or said second light beam to the signal recording surface of an optical recording medium [fig. 1, units 18 and 19] of a first type matching to the first wavelength or that of an optical recording medium of a second type matching to the second wavelength, whichever appropriate [col. 8, lines 38-47];

a photodetector [fig. 3B, unit 35] for detecting the light beam focused on the signal recording surface of the optical recording medium of the first type or that of the optical recording medium of the second type, whichever appropriate, by the objective lens and reflected by the signal recording surface [col. 8, lines 56-63]; and

a diffraction element [fig. 3B, unit 33] arranged in the light path from the light sources to the photodetector by way of one of the first or second type of optical recording medium, the diffraction element having a first diffraction angle [angle determined by equation (1), first wavelength lambda determines the first angle [col. 9, line 51] and a second diffraction angle [second wavelength lambda determines the second angle [col. 9, line 51], wherein a difference between the first diffraction angle and the second diffraction angle is predetermined to offset a distance separating the first light source and the second light source [position relation] [col. 9, line 35 to col. 10, line 22]; and

at least either of the first light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the first type and reflected by the signal recording surface of the optical recording medium of the first type or the second light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the second type and reflected by the signal recording surface of the optical recording medium of the second type and being diffracted by the diffraction element, wherein the first reflected light beam and the second reflected light beam being focused to a same spot [same

position] on the light receiving surface of the photodetector [col. 1, lines 17-30 and col. 12, line 56 to col. 13, line 4];

Uchizaki discloses all of the above elements, including diffraction grating element [fig. 3A, unit 33]. Uchizaki does not specifically discloses type of grating design being used in his system i.e. if his diffraction grating consist of a pair of plates or it can be of blazed type to the extent claimed.

However, pair of plates being used as blazed type diffraction gratings have been well known in the art for a very long time for improving the diffraction efficiency. Also Ohuchida clearly discloses:

A pair of plates [units 230 and 233] of a medium as a diffraction element [fig. 16-17] [col. 7, lines 45-58].

Both Uchizaki and Ohuchida are interested in improving the diffraction grating pattern in an optical disk device for recording and reading information. Both are disclosing diffraction gratings that are suitable for multiple wavelength.

One of ordinary skill in the art at the time of invention would have realized that reduction in the cost of the system is desired attribute to have in a system design, and this cab be achieved by reduction of the components. Also detection of polarization with high sensitivity is a desired feature to have.

Therefore, it would have been obvious to have used a pair of plates of blazed grating design in the system of Uchizaki as taught by Ohuchida because one would be motivated to reduce the part count in the system design [such as halfwave plate and Wollaston prism and thus save cost of the over all system and also more importantly detect the polarization with high sensitivity without using parts such as halfwave plates [col. 7, lines 5-11 and lines 25-30; Ohuchida].

8. The aforementioned claim 9, recites the following elements, inter alia, disclosed in Uchizaki:

A rotary operating mechanism [motor] for driving one or more than one optical disc operating so many pieces of optical recording medium as to rotate [motors for driving discs are inherently present in these kind of recording devices; and

an optical pickup device [fig. 1] arranged opposite to the signal recording surfaces of one or more than one optical discs driven to rotate by said rotary operating mechanism [motors are inherently placed on the opposite side of the optical head, so as not to interfere with recording and reading];

said optical pickup device comprising:

a first light source [fig. 5, unit 31A] for emitting a first light beam having a first wavelength [650 nm] [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

a second light source [fig. 5, unit 31B] for emitting a second light beam having a second wavelength [780 nm] different from the first wavelength [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

an objective lens [fig. 1-2, unit 17] for focusing said first light beam or said second light beam to the signal recording surface of an optical recording medium [fig. 1, units 18 and 19] of a first type matching to the first wavelength or that of an optical recording medium of a second type matching to the second wavelength, whichever appropriate [col. 8, lines 38-47];

a photodetector [fig. 3B, unit 35] for detecting the light beam focused on the signal recording surface of the optical recording medium of the first type or that of the optical recording medium of the second type, whichever appropriate, by the objective lens and reflected by the signal recording surface [col. 8, lines 56-63]; and

a diffraction element [fig. 3B, unit 33] arranged in the light path from the light sources to the photodetector by way of one of the first or second type of optical recording medium, the diffraction element having a first diffraction angle [angle determined by equation (1), first wavelength lambda determines the first angle [col. 9, line 51] and a second diffraction angle [second wavelength lambda determines the second angle [col. 9, line 51], wherein a difference between the first diffraction angle and the second diffraction angle is predetermined to offset a distance separating the first light source and the second light source [position relation] [col. 9, line 35 to col. 10, line 22]; and

at least either of the first light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the first

type and reflected by the signal recording surface of the optical recording medium of the first type or the second light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the second type and reflected by the signal recording surface of the optical recording medium of the second type and being diffracted by the diffraction element, wherein the first reflected light beam and the second reflected light beam being focused to a same spot [same position] on the light receiving surface of the photodetector [col. 1, lines 17-30 and col. 12, line 56 to col. 13, line 4];

Uchizaki discloses all of the above elements, including diffraction grating element [fig. 3A, unit 33]. Uchizaki does not specifically discloses type of grating design being used in his system i.e. if his diffraction grating consist of a pair of plates or it can be of blazed type to the extent claimed.

However, pair of plates being used as blazed type diffraction gratings have been well known in the art for a very long time for improving the diffraction efficiency. Also Ohuchida clearly discloses:

A pair of plates [units 230 and 233] of a medium as a diffraction element [fig. 16-17] [col. 7, lines 45-58].

Both Uchizaki and Ohuchida are interested in improving the diffraction grating pattern in an optical disk device for recording and reading information. Both are disclosing diffraction gratings that are suitable for multiple wavelength.

One of ordinary skill in the art at the time of invention would have realized that reduction in the cost of the system is desired attribute to have in a system design, and this cab be achieved by reduction of the components. Also detection of polarization with high sensitivity is a desired feature to have.

Therefore, it would have been obvious to have used a pair of plates of blazed grating design in the system of Uchizaki as taught by Ohuchida because one would be motivated to reduce the part count in the system design [such as halfwave plate and Wollaston prism and thus save cost of the over all system and also more importantly detect the polarization with high sensitivity without using parts such as halfwave plates [col. 7, lines 5-11 and lines 25-30; Ohuchida].

9. The aforementioned claim 10, recites the following elements, inter alia, disclosed in Uchizaki:

A rotary operating mechanism [motor] for driving one or more than one optical disc operating so many pieces of optical recording medium as to rotate [motors for driving discs are inherently present in these kind of recording devices; and

an optical pickup device [fig. 1] arranged opposite to the signal recording surfaces of one or more than one optical discs driven to rotate by said rotary operating mechanism [motors are inherently placed on the opposite side of the optical head, so as not to interfere with recording and reading];

said optical pickup device comprising:

a first light source [fig. 5, unit 31A] for emitting a first light beam having a first wavelength [650 nm] [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

a second light source [fig. 5, unit 31B] for emitting a second light beam having a second wavelength [780 nm] different from the first wavelength [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

an objective lens [fig. 1-2, unit 17] for focusing said first light beam or said second light beam to the signal recording surface of an optical recording medium [fig. 1, units 18 and 19] of a first type matching to the first wavelength or that of an optical recording medium of a second type matching to the second wavelength, whichever appropriate [col. 8, lines 38-47];

a photodetector [fig. 3B, unit 35] for detecting the light beam focused on the signal recording surface of the optical recording medium of the first type or that of the optical recording medium of the second type, whichever appropriate, by the objective lens and reflected by the signal recording surface [col. 8, lines 56-63]; and

a diffraction element [fig. 3B, unit 33] arranged in the light path from the light sources to the photodetector by way of one of the first or second type of optical recording medium, the diffraction element having a first diffraction angle [angle determined by equation (1), first wavelength lambda determines the first angle [col. 9, line 51] and a second diffraction angle [second wavelength lambda determines the

second angle [col. 9, line 51], wherein a difference between the first diffraction angle and the second diffraction angle is predetermined to offset a distance separating the first light source and the second light source [position relation] [col. 9, line 35 to col. 10, line 22]; and

each of the first light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the first type and reflected by the signal recording surface of the optical recording medium of the first type or the second light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the second type and reflected by the signal recording surface of the optical recording medium of the second type and being diffracted by the diffraction element, wherein the first reflected light beam and the second reflected light beam being focused to a same spot [same position] on the light receiving surface of the photodetector [col. 1, lines 17-30 and col. 12, line 56 to col. 13, line 4];

Uchizaki discloses all of the above elements, including diffraction grating element [fig. 3A, unit 33]. Uchizaki does not specifically discloses type of grating design being used in his system i.e. if his diffraction grating consist of a pair of plates or it can be of blazed type to the extent claimed.

However, pair of plates being used as blazed type diffraction gratings have been well known in the art for a very long time for improving the diffraction efficiency. Also Ohuchida clearly discloses:

A pair of plates [units 230 and 233] of a medium as a diffraction element [fig. 16-17] [col. 7, lines 45-58].

Both Uchizaki and Ohuchida are interested in improving the diffraction grating pattern in an optical disk device for recording and reading information. Both are disclosing diffraction gratings that are suitable for multiple wavelength.

One of ordinary skill in the art at the time of invention would have realized that reduction in the cost of the system is desired attribute to have in a system design, and this cab be achieved by reduction of the components. Also detection of polarization with high sensitivity is a desired feature to have.

Therefore, it would have been obvious to have used a pair of plates of blazed grating design in the system of Uchizaki as taught by Ohuchida because one would be motivated to reduce the part count in the system design [such as halfwave plate and Wollaston prism and thus save cost of the over all system and also more importantly detect the polarization with high sensitivity without using parts such as halfwave plates [col. 7, lines 5-11 and lines 25-30; Ohuchida].

10. The aforementioned claim 14, recites the following elements, inter alia, disclosed in Uchizaki:

A rotary operating mechanism [motor] for driving one or more than one optical disc operating so many pieces of optical recording medium as to rotate [motors for driving discs are inherently present in these kind of recording devices; and

an optical pickup device [fig. 1] arranged opposite to the signal recording surfaces of one or more than one optical discs driven to rotate by said rotary operating mechanism [motors are inherently placed on the opposite side of the optical head, so as not to interfere with recording and reading];

said optical pickup device comprising:

a first light source [fig. 5, unit 31A] for emitting a first light beam having a first wavelength [650 nm] [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

a second light source [fig. 5, unit 31B] for emitting a second light beam having a second wavelength [780 nm] different from the first wavelength [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

an objective lens [fig. 1-2, unit 17] for focusing said first light beam or said second light beam to the signal recording surface of an optical recording medium [fig. 1, units 18 and 19] of a first type matching to the first wavelength or that of an optical recording medium of a second type matching to the second wavelength, whichever appropriate [col. 8, lines 38-47];

a photodetector [fig. 3B, unit 35] for detecting the light beam focused on the signal recording surface of the optical recording medium of the first type or that of the

optical recording medium of the second type, whichever appropriate, by the objective lens and reflected by the signal recording surface [col. 8, lines 56-63]; and

a diffraction element [fig. 3B, unit 33] arranged in the light path from the light sources to the photodetector by way of one of the first or second type of optical recording medium, the diffraction element having a first diffraction angle [angle determined by equation (1), first wavelength lambda determines the first angle [col. 9, line 51] and a second diffraction angle [second wavelength lambda determines the second angle [col. 9, line 51], wherein a difference between the first diffraction angle and the second diffraction angle is predetermined to offset a distance separating the first light source and the second light source [position relation] [col. 9, line 35 to col. 10, line 22]; and

at least either of the first light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the first type and reflected by the signal recording surface of the optical recording medium of the first type or the second light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the second type and reflected by the signal recording surface of the optical recording medium of the second type and being diffracted by the diffraction element, wherein the first reflected light beam and the second reflected light beam being focused to a same spot [same position] on the light receiving surface of the photodetector [col. 1, lines 17-30 and col. 12, line 56 to col. 13, line 4];

Uchizaki discloses all of the above elements, including diffraction grating element [fig. 3A, unit 33]. Uchizaki does not specifically discloses type of grating design being used in his system i.e. if his diffraction grating consist of a pair of plates or it can be of blazed type to the extent claimed.

However, pair of plates being used as blazed type diffraction gratings have been well known in the art for a very long time for improving the diffraction efficiency. Also Ohuchida clearly discloses:

A pair of plates [units 230 and 233] of a medium as a diffraction element [fig. 16-17] [col. 7, lines 45-58].

Both Uchizaki and Ohuchida are interested in improving the diffraction grating pattern in an optical disk device for recording and reading information. Both are disclosing diffraction gratings that are suitable for multiple wavelength.

One of ordinary skill in the art at the time of invention would have realized that reduction in the cost of the system is desired attribute to have in a system design, and this cab be achieved by reduction of the components. Also detection of polarization with high sensitivity is a desired feature to have.

Therefore, it would have been obvious to have used a pair of plates of blazed grating design in the system of Uchizaki as taught by Ohuchida because one would be motivated to reduce the part count in the system design [such as halfwave plate and Wollaston prism and thus save cost of the over all system and also more importantly detect the polarization with high sensitivity without using parts such as halfwave plates [col. 7, lines 5-11 and lines 25-30; Ohuchida].

11. The aforementioned claim 15, recites the following elements, inter alia, disclosed in Uchizaki:

A rotary operating mechanism [motor] for driving one or more than one optical disc operating so many pieces of optical recording medium as to rotate [motors for driving discs are inherently present in these kind of recording devices; and

an optical pickup device [fig. 1] arranged opposite to the signal recording surfaces of one or more than one optical discs driven to rotate by said rotary operating mechanism [motors are inherently placed on the opposite side of the optical head, so as not to interfere with recording and reading];

said optical pickup device comprising:

a first light source [fig. 5, unit 31A] for emitting a first light beam having a first wavelength [650 nm] [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

a second light source [fig. 5, unit 31B] for emitting a second light beam having a second wavelength [780 nm] different from the first wavelength [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

an objective lens [fig. 1-2, unit 17] for focusing said first light beam or said second light beam to the signal recording surface of an optical recording medium [fig. 1, units 18 and 19] of a first type matching to the first wavelength or that of an optical recording medium of a second type matching to the second wavelength, whichever appropriate [col. 8, lines 38-47];

a photodetector [fig. 3B, unit 35] for detecting the light beam focused on the signal recording surface of the optical recording medium of the first type or that of the optical recording medium of the second type, whichever appropriate, by the objective lens and reflected by the signal recording surface [col. 8, lines 56-63]; and

a diffraction element [fig. 3B, unit 33] arranged in the light path from the light sources to the photodetector by way of one of the first or second type of optical recording medium, the diffraction element having a first diffraction angle [angle determined by equation (1), first wavelength lambda determines the first angle [col. 9, line 51] and a second diffraction angle [second wavelength lambda determines the second angle [col. 9, line 51], wherein a difference between the first diffraction angle and the second diffraction angle is predetermined to offset a distance separating the first light source and the second light source [position relation] [col. 9, line 35 to col. 10, line 22]; and

each of the first light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the first type and reflected by the signal recording surface of the optical recording medium of the first type or the second light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the second type and reflected by the signal recording surface of the optical recording medium of the second type and being diffracted by the diffraction element, wherein the first reflected light beam and the second reflected light beam being focused to a same spot [same position] on the light receiving surface of the photodetector [col. 1, lines 17-30 and col. 12, line 56 to col. 13, line 4];

Uchizaki discloses all of the above elements, including diffraction grating element [fig. 3A, unit 33]. Uchizaki does not specifically discloses type of grating design being

used in his system i.e. if his diffraction grating consist of a pair of plates or it can be of blazed type to the extent claimed.

However, pair of plates being used as blazed type diffraction gratings have been well known in the art for a very long time for improving the diffraction efficiency. Also Ohuchida clearly discloses:

A pair of plates [units 230 and 233] of a medium as a diffraction element [fig. 16-17] [col. 7, lines 45-58].

Both Uchizaki and Ohuchida are interested in improving the diffraction grating pattern in an optical disk device for recording and reading information. Both are disclosing diffraction gratings that are suitable for multiple wavelength.

One of ordinary skill in the art at the time of invention would have realized that reduction in the cost of the system is desired attribute to have in a system design, and this cab be achieved by reduction of the components. Also detection of polarization with high sensitivity is a desired feature to have.

Therefore, it would have been obvious to have used a pair of plates of blazed grating design in the system of Uchizaki as taught by Ohuchida because one would be motivated to reduce the part count in the system design [such as halfwave plate and Wollaston prism and thus save cost of the over all system and also more importantly detect the polarization with high sensitivity without using parts such as halfwave plates [col. 7, lines 5-11 and lines 25-30; Ohuchida].

12. The aforementioned claim 16, recites the following elements, inter alia, disclosed in Uchizaki:

A rotary operating mechanism [motor] for driving one or more than one optical disc operating so many pieces of optical recording medium as to rotate [motors for driving discs are inherently present in these kind of recording devices; and

an optical pickup device [fig. 1] arranged opposite to the signal recording surfaces of one or more than one optical discs driven to rotate by said rotary operating mechanism [motors are inherently placed on the opposite side of the optical head, so as not to interfere with recording and reading];

said optical pickup device comprising:

a first light source [fig. 5, unit 31A] for emitting a first light beam having a first wavelength [650 nm] [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

a second light source [fig. 5, unit 31B] for emitting a second light beam having a second wavelength [780 nm] different from the first wavelength [col. 10, lines 12-22 and col. 11, lines 25-31 and fig. 5];

an objective lens [fig. 1-2, unit 17] for focusing said first light beam or said second light beam to the signal recording surface of an optical recording medium [fig. 1, units 18 and 19] of a first type matching to the first wavelength or that of an optical recording medium of a second type matching to the second wavelength, whichever appropriate [col. 8, lines 38-47];

a photodetector [fig. 3B, unit 35] for detecting the light beam focused on the signal recording surface of the optical recording medium of the first type or that of the optical recording medium of the second type, whichever appropriate, by the objective lens and reflected by the signal recording surface [col. 8, lines 56-63]; and

a diffraction element [fig. 3B, unit 33] arranged in the light path from the light sources to the photodetector by way of one of the first or second type of optical recording medium, the diffraction element having a first diffraction angle [angle determined by equation (1), first wavelength lambda determines the first angle [col. 9, line 51] and a second diffraction angle [second wavelength lambda determines the second angle [col. 9, line 51], wherein a difference between the first diffraction angle and the second diffraction angle is predetermined to offset a distance separating the first light source and the second light source [position relation] [col. 9, line 35 to col. 10, line 22]; and

at least either of the first light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the first type and reflected by the signal recording surface of the optical recording medium of the first type or the second light beam adapted to be used for reading information signals from the signal recording surface of the optical recording medium of the second type and reflected by the signal recording surface of the optical recording medium of the

second type and being diffracted by the diffraction element, wherein the first reflected light beam and the second reflected light beam being focused to a same spot [same position] on the light receiving surface of the photodetector [col. 1, lines 17-30 and col. 12, line 56 to col. 13, line 4];

Uchizaki discloses all of the above elements, including diffraction grating element [fig. 3A, unit 33]. Uchizaki does not specifically discloses type of grating design being used in his system i.e. if his diffraction grating consist of a pair of plates or it can be of blazed type to the extent claimed.

However, pair of plates being used as blazed type diffraction gratings have been well known in the art for a very long time for improving the diffraction efficiency. Also Ohuchida clearly discloses:

A pair of plates [units 230 and 233] of a medium as a diffraction element [fig. 16-17] [col. 7, lines 45-58].

Both Uchizaki and Ohuchida are interested in improving the diffraction grating pattern in an optical disk device for recording and reading information. Both are disclosing diffraction gratings that are suitable for multiple wavelength.

One of ordinary skill in the art at the time of invention would have realized that reduction in the cost of the system is desired attribute to have in a system design, and this cab be achieved by reduction of the components. Also detection of polarization with high sensitivity is a desired feature to have.

Therefore, it would have been obvious to have used a pair of plates of blazed grating design in the system of Uchizaki as taught by Ohuchida because one would be motivated to reduce the part count in the system design [such as halfwave plate and Wollaston prism and thus save cost of the over all system and also more importantly detect the polarization with high sensitivity without using parts such as halfwave plates [col. 7, lines 5-11 and lines 25-30; Ohuchida].

13. As to claim 17-20, 22 and 24-26, combination of Uchizaki and Ohuchida teaches dual plate diffraction element and each having a different diffraction angle [col. 7, lines 1-58; Ohuchida]. Combination does not teach that the diffraction angle is regulated by

adjusting the distance between the first plate and second plate. “Official Notice” is taken that both the concept and the advantages of providing adjustable diffraction plates are well known and expected in the art. It would have been obvious to include an adjustable diffraction plates to Ohuchida system as this adjustable plates are known to provide the different diffraction angles. Adjusting distance inherently produces different diffraction angles. Here the Applicant is merely claiming how a diffraction plate works. These concepts are well known in the art and do not constitute a patentably distinct limitation, per se [M.P.E.P. 2144.03].

14. The aforementioned claims 21 and 23, recites the following elements, inter alia, disclosed in Uchizaki:

said diffraction element is arranged on one of a forward light path or backward light path of said light path from the light sources to the photodetector [fig. 1, col. 8, line 38 to col. 9, line 34].

Other prior art cited

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Dang et al. (US. Patent 5,953,304) “Optical disc ....”.

b. Yoshida et al. (US. patent 5,085,496) “Optical element ....”.

c. Hayashi et al. (US. patent 5,629,919) “Two plate-like ...”

Contact Information

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gautam R. Patel whose telephone number is (703) 308-7940. The examiner can normally be reached on Monday through Thursday from 7:30 to 6.

The appropriate fax number for the organization (Group 2650) where this application or proceeding is assigned is (703) 872-9314.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Doris To can be reached on (703) 305-4827.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 305-4700 or the group Customer Service section whose telephone number is (703) 306-0377.

GAUTAM R. PATEL
PRIMARY EXAMINER

Gautam R. Patel
Primary Examiner
Group Art Unit 2655

January 7, 2005